

THE IMPACT OF WORKING CAPITAL MANAGEMENT ON FIRM'S PERFORMANCE OF SELECTED COMPANIES IN BOMBAY STOCK EXCHANGE

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ABSTRACT

Working capital management is needed for day to day operations of a business firm. Working capital management involves administration of the most liquidity resources of the business firms which include cash and cash equivalents, inventories and trade and other receivables. Adequate management of working capital will result in achievement of maximum gross operating profit thus maintaining liquidity position and maximizing shareholders' wealth which is the central tendency of the goal of any firm. This study investigates the impact of working capital management on the firm's performance of selected companies in Bombay stock exchange for the period 2006-2015. The manufacturing company are taken for the research. The study determines a significant relationship between working capital management and corporate performance of manufacturing companies listed in BSE. The study found that the cash conservation cycle, inventory collection period and current ratio is positively correlated with return on assets, where time span of company between collection of inventory purchase and sales is better and payment of creditors back. The variance inflation factor indicates how much larger the standard error is, compared with the current ratio in the model were uncorrelated. The average payment period is statistically best model for explaining the dependent variable. It means the firm's performance is significantly affected by changes in all models.

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INTRODUCTION

Working Capital (abbreviated WC) is a financial metric which represents operating liquidity available to a business, organization or other entity, including governmental entity. Along with fixed assets such as plant and equipment, working capital is considered a part of operating capital. Gross working capital equals to current assets. Working capital is calculated as current assets minus current liabilities. If current assets are less than current liabilities, an entity has a working capital deficiency, also called a working capital deficit.

A company can be endowed with assets and profitability but short of liquidity if its assets cannot readily be converted into cash. Positive working capital is required to ensure that a firm is able to continue its operations and that it has sufficient funds to satisfy both maturing short-term debt and upcoming operational expenses. The management of working capital involves managing inventories, accounts receivable and payable, and cash.

Working capital is the difference between the current assets and the current liabilities. The basic calculation of the working capital is done on the basis of the gross current assets of the firm.

1.1.1 Inputs

Current assets and current liabilities include three accounts which are of special importance. These accounts represent the areas of the business where managers have the most direct impact:

- Accounts Receivable (Current Asset)
- Inventory (Current Assets), and
- Accounts Payable (Current Liability)

The current portion of debt (payable within 12 months) is critical, because it represents a short-term claim to current assets and is often secured by long-term assets. Common types of short-term debt are bank loans and lines of credit. An increase in net working capital indicates that the business has either increased current assets (that it has increased its receivables or other current assets) or has decreased current liabilities—for example has paid off some short-term creditors, or a combination of both.

1.1.2 Working Capital Cycle

The Working Capital Cycle (WCC) is the amount of time it takes to turn the net current assets and current liabilities into cash. The longer the cycle is, the longer a business is tying up capital in its working capital without earning a return on it. Therefore, companies strive to reduce their working capital cycle by collecting receivables quicker or sometimes stretching accounts payable.

A positive working capital cycle balances incoming and outgoing payments to minimize net working capital and maximize free cash flow. For example, a company that pays its suppliers in 30 days but takes 60 days to collect its receivables has a working capital cycle of 30 days. This 30-day cycle usually needs to be funded through a bank operating line, and the interest on this financing is a carrying cost that reduces the company's profitability. Growing businesses require cash, and being able to free up cash by shortening the working capital cycle is the most inexpensive way to grow. Sophisticated buyers review closely a target's working capital cycle because it provides them with an idea

of the management's effectiveness at managing their balance sheet and generating free cash flows.

As an absolute rule of funders, each of them wants to see a positive working capital. Such situation gives them the possibility to think that your company has more than enough current assets to cover financial obligations. Though, the same can't be said about the negative working capital. A large number of funders believe that businesses can't be sustainable with a negative working capital, which is a wrong way of thinking. In order to run a sustainable business with a negative working capital it's essential to understand some key components.

- Approach your suppliers and persuade them to let you purchase the inventory on 1-2 month credit terms, but keep in mind that you must sell the purchased goods, to consumers, for money.
- Effectively monitor your inventory management, make sure that it's often refilled and with the help of your supplier, back up your warehouse.

Plus, big companies like McDonald's, Amazon, Dell, General Electric and Wal-Mart are using negative working capital.

1.1.3 Working Capital Management

Decisions relating to working capital and short-term financing are referred to as working capital management. These involve managing the relationship between a firm's short-term assets and its short-term liabilities. The goal of working capital management is to ensure that the firm is able to continue its operations and that it has sufficient cash flow to satisfy both maturing short-term debt and upcoming operational expenses.

A managerial accounting strategy focusing on maintaining efficient levels of both components of working capital, current assets and current liabilities, in respect to each other. Working capital management ensures a company has sufficient cash flow in order to meet its short-term debt obligations and operating expenses.

1.1.4 Management of Working Capital

Guided by the above criteria, management will use a combination of policies and techniques for the management of working capital. The policies aim at managing the current assets (generally cash and cash equivalents, inventories and debtors) and the short-term financing, such that cash flows and returns are acceptable.

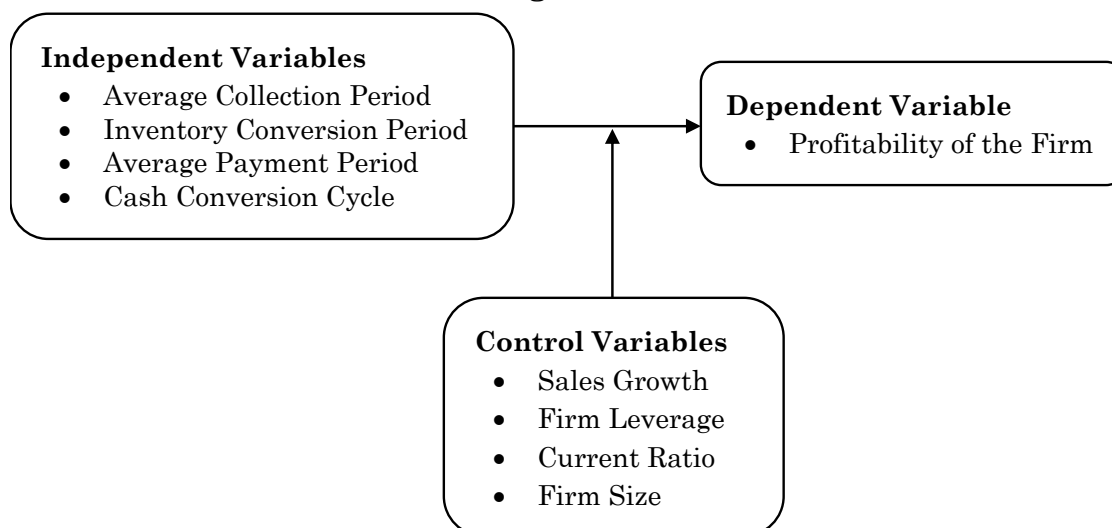
- Inventory management. Identify the level of inventory which allows for uninterrupted production but reduces the investment in raw materials—and minimizes reordering costs—and hence increases cash flow. Besides this, the lead times in production should be lowered to reduce Work in Process (WIP) and similarly, the Finished Goods should be kept on as low level as possible to avoid over production—see Supply chain management; Just In Time (JIT); Economic order quantity (EOQ); Economic quantity

1.1.5 Inventory Management

The composition of an inventory differs depending on what kind of production or business companies are involved in. The five different assets an inventory can consist of are; raw materials, work in progress materials, finished goods, extra material and consumption

materials. Most companies have an inventory that they more or less depend on in their operation. The manufacturing companies can hold an inventory that consist of all five different materials and for them keeping an inventory is essential for their production. For most companies the inventory can be seen as an unavoidable cost

Figure – 1



1.2 Conceptual Framework

1.2.1 Cash Conversion Cycle

In management accounting, the Cash conversion cycle (CCC) measures how long a firm will be deprived of cash if it increases its investment in resources in order to expand customer sales. It is thus a measure of the liquidity risk entailed by growth. However, shortening the CCC creates its own risks: while a firm could even achieve a negative CCC by collecting from customers before paying suppliers, a policy of strict collections and lax payments is not always sustainable.

$$\text{CCC} = \text{Inventory conversion period} + \text{Receivables conversion period} - \text{Payables conversion period}$$

Where, CCC = # days between disbursing cash and collecting cash in connection with undertaking a discrete unit of operations.

Cash flows insufficient. The term "Cash Conversion Cycle" refers to the timespan between a firm's disbursing and collecting cash. However, the CCC cannot be directly observed in cash flows, because these are also influenced by investment and financing activities; it must be derived from Statement of Financial Position data associated with the firm's operations.

Equation describes retailer. Although the term "cash conversion cycle" technically applies to a firm in any industry, the equation is generically formulated to apply specifically to a retailer. Since a retailer's operations consist of buying and selling inventory, the equation models the time between:

- Disbursing cash to satisfy the accounts payable created by purchase of inventory, and
- Collecting cash to satisfy the accounts receivable generated by that sale.

Equation describes a firm that buys and sells on account. Also, the equation is written to accommodate a firm that buys and sells on account. For a cash-only firm, the equation would only need data from sales operations (e.g. changes in inventory), because disbursing cash would be directly measurable as purchase of inventory, and collecting cash would be directly measurable as sale of inventory. However, no such 1:1 correspondence exists for a firm that buys and sells on account: Increases and decreases in inventory do not occasion cash flows but accounting vehicles (payables and receivables, respectively); increases and decreases in cash will remove these accounting vehicles (receivables and payables, respectively) from the books. Thus, the CCC must be calculated by tracing a change in cash through its effect upon receivables, inventory, payables, and finally back to cash—thus, the term cash conversion cycle, and the observation that these four accounts "articulate" with one another.

Taking these four transactions in pairs, analysts draw attention to five important intervals, referred to as conversion cycles (or conversion periods):

- The Cash conversion cycle emerges as interval C→D (i.e. disbursing cash→collecting cash).
- The Payables conversion period (or "Days payables outstanding") emerges as interval A→C (i.e. owing cash→disbursing cash)
- The Operating cycle emerges as interval A→D (i.e. owing cash→collecting cash)
- The Inventory conversion period or "Days inventory outstanding" emerges as interval A→B (i.e. owing cash→being owed cash)
- The Receivables conversion period (or "Days sales outstanding") emerges as interval B→D (i.e. Being owed cash collecting cash)

Knowledge of any three of these conversion cycles permits derivation of the fourth (leaving aside the operating cycle, which is just the sum of the inventory conversion period and the receivables conversion period.)

Hence, Interval {C → D} = interval {A → B} + interval {B → D} – interval {A → C}

In calculating each of these three constituent Conversion Cycles, the equation $\text{Time} = \text{Level}/\text{Rate}$ is used (since each interval roughly equals the Time needed for its Level to be achieved at its corresponding Rate). Its LEVEL "during the period in question" is estimated as the average of its levels in the two balance-sheets that surround the period: $(Lt1 + Lt2)/2$.

To estimate its Rate, note that Accounts Receivable grows only when revenue is accrued; and Inventory shrinks and Accounts Payable grows by an amount equal to the COGS expense (in the long run, since COGS actually accrues sometime after the inventory delivery, when the customers acquire it).

Payables Conversion Period: Rate = [inventory increase + COGS], since these are the items for the period that can increase "trade accounts payables," i.e. the ones that grew its inventory. Note that an exception is made when calculating this interval: although a period average for the Level of inventory is used, any increase in inventory contributes to its Rate of change. This is because the purpose of the CCC is to measure the effects of inventory growth on cash outlays. If inventory grew during the period, this would be important to know.

Inventory Conversion Period: Rate = COGS, since this is the item that (eventually) shrinks inventory. Receivables conversion period: Rate = revenue, since this is the item that can grow receivables (sales).

1.2.2 Aims of CCC

The aim of studying cash conversion cycle and its calculation is to change the policies relating to credit purchase and credit sales. The standard of payment of credit purchase or getting cash from debtors can be changed on the basis of reports of cash conversion cycle. If it tells good cash liquidity position, past credit policies can be maintained. Its aim is also to study cash flow of business. Cash flow statement and cash conversion cycle study will be helpful for cash flow analysis.

1.2.3 Average Collection Period (Days Sales Outstanding)

In accountancy, day's sales outstanding (also called DSO and days receivables) is a calculation used by a company to estimate their average collection period. It is a financial ratio that illustrates how well a company's accounts receivables are being managed. The day's sales outstanding figure is an index of the relationship between outstanding receivables and credit account sales achieved over a given period.

Typically, day's sales outstanding is calculated monthly. The day's sales outstanding analysis provides general information about the number of days on average that customers take to pay invoices. Generally speaking, though, higher DSO ratio can indicate a customer base with credit problems and/or a company that is deficient in its collections activity. A low ratio may indicate the firm's credit policy is too rigorous, which may be hampering sales.

Day's sale outstanding is considered an important tool in measuring liquidity. Day's sales outstanding tend to increase as a company becomes less risk averse. Higher day's sales outstanding can also be an indication of inadequate analysis of applicants for open account credit terms. An increase in DSO can result in cash flow problems, and may result in a decision to increase the creditor company's bad debt reserve.

An ACP can be expressed as:

$$\text{Average Payment Period} = \frac{365/52/12}{\text{Debtors Turnover Ratio}}$$

$$\text{Debtors Turnover Ratio} = \frac{\text{Total Sales}}{\text{Debtors}}$$

Days sales outstanding can vary from month to month, and over the course of a year with a company's seasonal business cycle. Of interest when analyzing the performance of a company is the trend in DSO. If DSO is getting longer, customers are taking longer to pay their bills, which may be a warning that customers are dissatisfied with the company's product or service, or that sales are being made to customers that are less credit-worthy, or that salespeople have to offer longer payment terms in order to generate sales. Many financial reports will state Receivables Turnover defined as Net Credit Account Sales / Trade Receivables; divide this value into the time period in days to get DSO. However, day's sale outstanding is not the most accurate indication of the efficiency of accounts receivable department. Changes in sales volume influence the outcome of the day's sales outstanding calculation. A better way to measure the performance of credit and collection function is by looking at the total overdue balance in proportion of the total accounts receivable balance (total AR = Current + Overdue), which is sometimes calculated using the days' delinquent sales outstanding (DDSO) formula.

1.2.4 Average Payment Period (Days Payable Outstanding):

Days Payable Outstanding (DPO) is an efficiency ratio that measures the average number of days a company takes to pay its suppliers.

The formula for APP is:

$$\text{Average Payment Period} = \frac{365/52/12}{\text{Creditor Turnover Ratio}}$$

$$\text{Credit Turnover Ratio} = \frac{\text{Total Sales}}{\text{Creditors}}$$

Where ending A/P is the accounts payable balance at the end of the accounting period being considered and Purchase/day is calculated by dividing the total cost of goods sold per year by 365 days.

DPO provides one measure of how long a business holds onto its cash. DPO can also be used to compare one company's payment policies to another. Having fewer days of payables on the books than your competitors means they are getting better credit terms from their vendors than you are from yours. If a company is selling something to a customer, they can use that customer's DPO to judge when the customer will pay (and thus what payment terms to offer or expect). Having a greater days payables outstanding may indicate the Company's ability to delay payment and conserve cash. This could arise from better terms with vendors.

1.2.5 Inventory Collection Period (Days in Inventory)

Days in inventory (also known as 'Inventory Days of Supply (DoS)', 'Days Inventory Outstanding' or 'the Inventory Period') is an efficiency ratio that measures the average number of days the company holds its inventory before selling it. The ratio measures the number of days funds are tied up in inventory. Inventory levels (measured at cost) are divided by sales per day (also measured at cost rather than selling price.)

The formula for ICP is:

$$\text{Inventory Collection Period} = \frac{\text{Average Inventory} \times 12}{\text{Cost of Goods Sold}}$$

Where the average inventory is the average of inventory levels at the beginning and end of an accounting period, and COGS/day is calculated by dividing the total cost of goods sold per year by 365 days (or) 12 months (or) 52 weeks.

1.2.6 Return on Assets

The Return on Assets (ROA) shows the percentage of how profitable a company's assets are in generating revenue. ROA can be computed as:

$$\text{ROA} = \frac{\text{Earnings before Tax and Interest}}{\text{Total Assets}}$$

This number tells you what the company can do with what it has, i.e. how many dollars of earnings they derive from each dollar of assets they control. It's a useful number for comparing competing companies in the same industry. The number will vary widely across different industries. Return on assets gives an indication of the capital intensity of the company, which will depend on the industry; companies that require large initial

investments will generally have lower return on assets. ROA over 5% are generally considered good

1.2.7 Current Ratio

The current ratio is a liquidity ratio that measures whether or not a firm has enough resources to meet its short-term obligations. It compares a firm's current assets to its current liabilities, and is expressed as follows:

$$\text{Current Ratio} = \frac{\text{Current Asset}}{\text{Current Liability}}$$

The current ratio is an indication of a firm's liquidity. Acceptable current ratios vary from industry to industry. In many cases a creditor would consider a high current ratio to be better than a low current ratio, because a high current ratio indicates that the company is more likely to pay the creditor back. Large current ratios are not always a good sign for investors.

If current liabilities exceed current assets the current ratio will be less than 1. A current ratio of less than 1 indicates that the company may have problems meeting its short-term obligations. Some types of businesses can operate with a current ratio of less than one however. If inventory turns into cash much more rapidly than the accounts payable become due, then the firm's current ratio can comfortably remain less than one. Inventory is valued at the cost of acquiring it and the firm intends to sell the inventory for more than this cost. The sale will therefore generate substantially more cash than the value of inventory on the balance sheet.

1.2.8 Debt Ratio

Debt Ratio is a financial ratio that indicates the percentage of a company's assets that are provided via debt. It is the ratio of total debt (the sum of current liabilities and long-term liabilities) and total assets.

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

Total liabilities divided by total assets or the debt/asset ratio shows the proportion of a company's assets which are financed through debt. If the ratio is less than 0.5, most of the company's assets are financed through equity. If the ratio is greater than 0.5, most of the company's assets are financed through debt. Companies with high debt/asset ratios are said to be highly leveraged. The higher the ratio, the greater risk will be associated with the firm's operation. In addition, high debt to assets ratio may indicate low borrowing capacity of a firm, which in turn will lower the firm's financial flexibility. Like all financial ratios, a company's debt ratio should be compared with their industry average or other competing firms.

1.2.9 Size of Firm

SIZE is the company size as measured by natural logarithm of total sales. it is calculated as:

$$\text{Size of Firm} = \text{Natural Logarithm of Net Sales}$$

An industrial society will tend to have large firms, as industry has substantial economies of scale. A service-based economy will favour smaller firms, as services have limited economies of scale.

1.2.10 Sales Growth

It is growth of the company for each and every year of sales. It is calculated as

$$\text{Sales Growth} = \frac{\text{Sales}_t - \text{Sales}_{t-1}}{\text{Sales}_{t-1}}$$

The growth of the company has a major five themes: Finding growth before your competitors do. Selling the way customers want. Optimizing sales operations and technology. Finding sales leaders who continually challenge the status quo and thoughtfully manage performance. Leading sales growth to make change happen

1.3 Statement of the Problem

- The problem of the statement is to find a significant relationship between working capital management and firms' performance.
- To find the impact of selected variables on return on assets of the company

1.4 Objective of the Study

The objective of the research is to examine the impact of working capital management on firms' performance of manufacturing companies listed in BSE assumes the following specific objectives:

- To evaluate the effect of inventory management on firms' performance
- To analyse the effect of receivable management on firms' performance
- To determine the relationship between working capital management and corporate performance of manufacturing companies listed in BSE.

1.5 Scope of the Study

- The scope of the research is restricted to selected companies in Bombay stock exchange & all the analysis and suggestions are based on the analysis of the secondary data.
- It will be better and exhaustive for the study has a chance of incorporating other manufacturing enterprises found in BSE
- This research may help the company to make further planning and strategy.

1.6 Limitations of the Study

- The selected companies were not interested to give primary information about the issue under consideration.
- The variables used are delimited to one type of variables: profitability and control variables, which are specific to firms and general to the economy as a whole and clearly point out the methodology part.
- The findings of the study will be limited because of lack of willingness and reliability of the data, adequate accounting disclosure and treatment.
- Sample size limited to 22 manufacturing companies due to unrelated data in other sector.

1.7 Review of Literature

Many researchers have studied working capital from different views and in different environments. The following ones were very interesting and useful for the research:

Scherr (1989) analysed that by implementing best practices in Working capital, companies strengthen strong cash flow levels, improve profitability, budgeting and forecasting process, predictability and manageability of results, heighten risk visibility and reduce reaction time. Shin and Soenen (1998) highlighted that efficient Working capital management is very important for creating value for the shareholders.

Cote and Latham (1999) argued the management of receivables, inventory and accounts payable have tremendous impact on cash flows, which in turn affect the profitability of firms. Each of the Working capital items (i.e., cash, receivables and inventories) helps in the management of firms in its own particular way.

Anand and Gupta (2002) analysed working capital management performance of Corporate India by using three financial parameters – Cash Conversion Efficiency Days Operating Cycle and Days Working Capital and by assigning them different weights in the overall score, to rank and analyse working capital management performance. This study provides the estimates by using data of 427 companies over the period 1998-99 to 2000- 01 for each company and for each industry. The presence of these three in the overall working capital performance criterion not only helps in performance evaluation but also will capture the dynamics of risk-return trade off.

Moyer et al. (2003) found that Working Capital consists of a large portion of a firm's total investment in assets, 40% in manufacturing and 50-60% in retailing and wholesale industries respectively. The firms could reduce its financing cost and increase the funds available for expansion if they minimise the funds tied up in current assets. They found that cash helps to keep the firm liquid. It enables the firm to pay its obligations and also protects the firm from becoming bankrupt.

Ghebregiorgis (2004) analysed the working capital practices and efficiency in managing the same in Keren Metal, Wood and Cement Works, a manufacturing firm operating under joint venture in Eritrea. The study reveals that the firm only managed the working capital to ensure that the internal control of the firm is maintained and not to create value by optimal utilization of the working capital.

The impact of working capital management on the value of 150 firms during 1990 to 2004 was examined by Laplent (2005). It was found that the trends of the firms, size and future sales growth affect the efficiency of the working capital management. The positive relationship between working capital management and firms' performance was confirmed by the authors.

Deloof and Lazaridis et al. (2006) both observed a negative correlation between accounts payable and firm profitability, arguing in the same direction. In conclusion, Lazaridis et al. (2006) advocate greater attention to working capital management and the optimized handling of the various components of the CCC.

Bhunias (2007) made an assessment of management of working capital of Steel Authority of India Limited and Indian Iron and Steel Company Limited from 1991-92 to 2002-03 with the help of financial tools and statistical techniques. Finding reveals that both

the companies have maintained inadequate working capital, poor liquidity, and managed 70 inventory and receivables inefficiently during the period of study.

Kieschnick et al. (2008) in their empirical study they examine the relationship between corporate working capital management and company value, as well as examination of how agency costs influence this relationship. They find that on average an additional dollar invested in net operating working capital at the mean level of such investment reduces company value and also the exclusion of agency costs in prior models of the effect of working capital management on company value is of importance.

In the study of Uyar (2009) he examined industry benchmarks for cash conversion cycle (CCC) of merchandising and manufacturing companies and found that merchandising industry has shorter CCC than manufacturing industries. He further examined the relationship between the length of the CCC and the size of the firms and the findings indicated a significant negative correlation between the length of CCC and the firm size, in terms of both net sales and total assets. The study further showed significant negative correlation between the length of CCC and the profitability.

Mohamad and Saad (2010) explored the effects of working capital to the company's profitability and the value of the company. The result shows that there are significant negative associations between working capital and company's performance. Another approach introduced by Salawu (2007) investigates the relationship between aggressive and conservative working capital practices. Results strongly show that companies in differing industries have significantly different current asset management policies. It is evident that there is a significant negative correlation between industry asset and liability policies.

Bhunia, Khan and Mukhuti (2011) provided the evidence with respect to the relationship between liquidity and profitability of a firm. They took steel companies of private sector in India to assess the management of liquidity as a factor of performance. They studied important liquidity indicators and analyzed that optimal working capital management can be achieved by controlling the trade-off between profitability and liquidity of a firm. Firm value is positively affected by optimal working capital management so the investment in working capital must be satisfactory. They concluded that liquidity and profitability are significantly positively associated.

Usama (2012) extended the work of Rehman and Nasar regarding working capital management while taking the sample of 18 companies from other food sector listed on Karachi Stock Exchange for the period of 2006-2010. The researcher used different variables to measure working capital management such as average collection period, inventory turnover in days, cash conversion cycle, average payment period, debt ratio, firm size, current ratio, and financial asset to total asset. Using common effect model and pooled least square regression, the results indicated that working capital management has significant positive association with firm's profitability and liquidity.

Kaur Harsh V. and Singh Sukhdev (2013) analyse empirically BSE 200 manufacturing companies spread over 19 industries for the period 2000 to 2010. The study explores scope to increase the efficiency and profitability of 145 companies by improving the parameters of analysis. The study tests the relationship between the working capital score and profitability measured by income to current assets and income to average total assets. This article concentrates on cash conversion efficiency and planning the operating cycle

days. At the end, the study emphasizes that efficient management of working capital significantly affects profitability

Wobshet Mengesha(2014) this study examined the impact of working capital management on firm performance by using audited financial statements of a sample of 11 metal manufacturing private limited companies in Addis Ababa, Ethiopia for the period of 2008 to 2012. The performance was measured in terms of profitability by return on total assets, and return on investment capital as dependent financial performance (profitability) variables. The working capital show that there exists significant negative relationship between cash conversion cycle and profitability measures of the sampled firms. In general, paying suppliers longer and collecting payments from customers earlier, and keeping product in stock less time, are all associated with an increase in the firms' performance.

RESEARCH METHODOLOGY

Research methodology is a methodology for collecting all sorts of information & data pertaining to the subject in question. The objective is to examine all the issues involved & conduct situational analysis. The methodology includes the overall research design, sampling procedure & fieldwork done & finally the analysis procedure. The methodology used in the study consistent of sample survey using both primary & secondary data. The primary data has been collected with the help of questionnaire as well as personal observation book, magazine; journals have been referred for secondary data. The questionnaire has been drafted & presented by the researcher himself.

2.1 Sample Size

- Size of sample is about 22 manufacturing companies listed in BSE, was taken into study, and their data was collected.
- From the listed BSE 30 companies the data is take only from the manufacturing industry such as to be 22 companies. So we neglect banking & software sector due to unrelated data for the respective sector.

2.2 Data Collection

- The study is based on secondary data. Secondary data here has been collected from each and every company annual report from their respective company profile.
- Samples were collected from secondary data for the study period of ten years from 2006 – 2015 has been collected from secondary sources i.e. audited Annual reports of the companies

2.3 Research Design

A research design is the set of methods and procedures used in collecting and analysing measures of the variables specified in the research problem research study. Exploratory research on the other hand seeks to generate some posteriori hypotheses by examining a data-set and looking for potential relations between variables. It is also possible to have an idea about a relation between variables but to lack knowledge of the direction and strength of the relation. The advantage of exploratory research is that it is

easier to make new discoveries due to the less stringent methodological restrictions. In addition, Statistical Package for Social Science (SPSS) (version 20.00) is applying to get results.

2.4 Research Sample Selection

The data used in this study are collected from all selected companies in BSE. To select sample firms, the researcher employed Non probabilistic sampling specifically purposive sampling (Homogeneous sampling) rather than taking the whole thing so as to meet the requirements.

2.5 Homogeneous sampling

Homogeneous sampling is a type of purposive sampling technique that aims to achieve a homogeneous sample; that is, a sample whose units (i.e., people, cases/organizations, events, pieces of data) share the same characteristics or traits (e.g., a group of people that are similar in terms of age, gender, background, occupation, etc.). A homogeneous sample is often chosen when the research question that is being address is specific to the characteristics of the particular group of interest.

2.6 Research Instruments or Data Collection Tools/ Instruments

To gather the necessary data copies of audited financial statements in the form of income statements, statement of financial position and cash flow statements over a period of ten years were obtained from the sampled firms. This was necessary to obtain an accurate measure of the impact of the practices in terms of liquidity and profitability as ten years may be enough to measure this. The period of ten years was chosen because the majority of the manufacturing companies.

2.7 Data Analysis

This research provided two types of data analysis; descriptive and quantitative.

2.7.1 Descriptive Analysis

Descriptive analysis is the first step in this analysis; it was used to describe relevant aspects of phenomena about the variables and provide detailed information about each relevant variable. The results have been got by applying the statistical tools namely Statistical Package for Social Science (SPSS version 20.00) software has been used for analysis of the different variables.

2.7.2 Research Hypothesis

A few numbers of research hypothesis can be made in view of the impact of working capital management on firms' performance. In light of the research objective the following discussion will covers the hypotheses that this study will attempt to test.

- **H₁:** Cash conversion cycle is significant related to financial performance of the firm.
- **H₂:** Inventory management (holding periods) have significant impact on firms' financial Performance.
- **H₃:** The way how receivables are managed has significant effect on the financial performance of firms.

- **H₄:** Accounts payable periods has significant impact on the financial performance of firms.

2.7.3 Analytical Tools

(i) Correlation Analysis: Correlation is used to measure the direction of the linear relationship between two variables as well as to measure the strength of association between variables.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

In this study, the Pearson's Correlation Coefficient is calculated to see the relationship between all variables. As for the direction of the relationship, the positive correlation indicates that when one variable increase another also increases while the negative correlation shows inverse relationship and also Regression analysis was used to estimate the causal relationships between profitability variable, liquidity and other chosen variables under consideration. A pooled regression was conducted since the data has both time series and cross-sectional dimensions. As a result, Ordinary Least Squares and Generalized Least Squares (cross section weights) methods used for analysis.

2.7.4 Regression Analysis

Regression analysis is a statistical process for estimating the relationships among variables. It includes many techniques for modelling and analysing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed.

2.7.5 Model Specifications

As mentioned above, the impact of working capital management on firms' performance was Estimated by using similar quantitative models. The general formula used for the model is:

$$ROA_{it} = \beta_0 + \sum_{t=1}^n \beta_i X_{it} + \varepsilon$$

ROA_{it} = Return on Asset, i at time t; i = 1, 2, 3...,22 firms respectively.

β₀ = the intercept of equation

β_i = Coefficient of X_{it} variables

X_{it} = the different independent variables for working capital management of firm i at time t.

t = Time from 1, 2..., 5 years

ε = error term

Model 1

This model is used to test the first hypothesis; dependence of Return on Asset on cash conversion cycle (CCC).

- $ROA_{it} = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (CR_{it}) + \beta_3 (ITG_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DR_{it})$

Model 2

This model is used to test the second hypothesis; dependence of Return on Asset on inventory conversion period (ICP).

$$\bullet \quad ROA_{it} = \beta_0 + \beta_1 (ICP_{it}) + \beta_2 (CR_{it}) + \beta_3 (ITG_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DR_{it})$$

Model 3

This model is used to test the third hypothesis; dependence of Return on Asset on Accounts receivable period (ARP).

$$\bullet \quad ROA_{it} = \beta_0 + \beta_1 (ACP_{it}) + \beta_2 (CR_{it}) + \beta_3 (ITG_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DR_{it})$$

Model 4

This model is used to test the forth hypothesis; dependence of Return on Asset on accounts payable period (APP).

$$\bullet \quad ROA_{it} = \beta_0 + \beta_1 (APP_{it}) + \beta_2 (CR_{it}) + \beta_3 (ITG_{it}) + \beta_4 (LnSales_{it}) + \beta_5 (DR_{it})$$

Where,

- **ROA_{it}** = return on assets of firm i for time period t
- **CCC_{it}** = cash conversion cycle of firm i for time period t
- **ACP_{it}** = Average collection period of firm i for time period t
- **APP_{it}** = Average payment period of firm i for time period t
- **ICP_{it}** = Inventory collection period of firm i for time period t
- **CR_{it}** = Current Ratio of firm i for time period t
- **ITG_{it}** = Inter – temporal growth in sales of firm i for time period t
- **Ln Sales_{it}** = Natural Log of Sales of firm i for time
- **DR_{it}** = Total Liabilities/Total Assets of firm i for time period t
- **β₀** = intercept

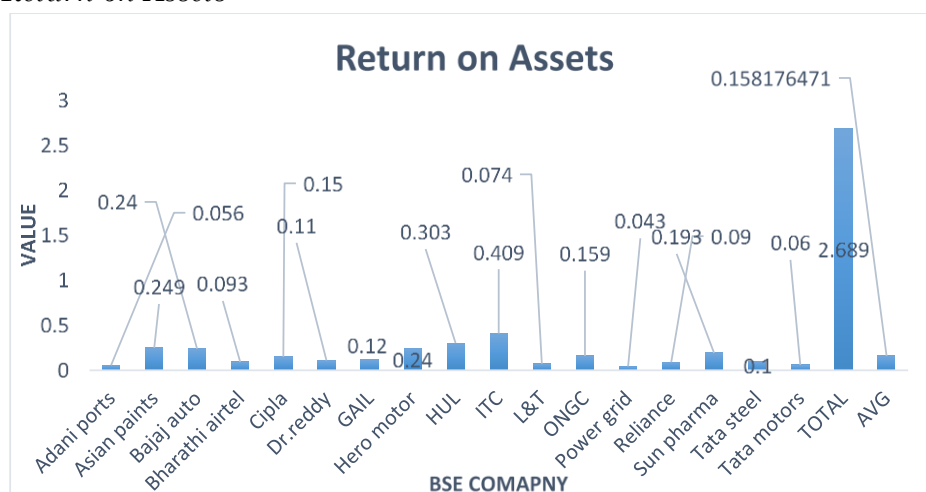
ANALYSIS AND INTERPRETATION

Table – 1: *Return on Assets*

Adani ports	0.056
Asian paints	0.249
Bajaj auto	0.24
Bharathi airtel	0.093
Cipla	0.15
Dr.reddy	0.11
GAIL	0.12
Hero motor	0.24
HUL	0.303
ITC	0.409
L&T	0.074
ONGC	0.159
Power grid	0.043

Reliance	0.09
Sun pharma	0.193
Tata steel	0.1
Tata motors	0.06
TOTAL	2.689
AVG	0.158176471

Chart – 1: Return on Assets



Interpretation

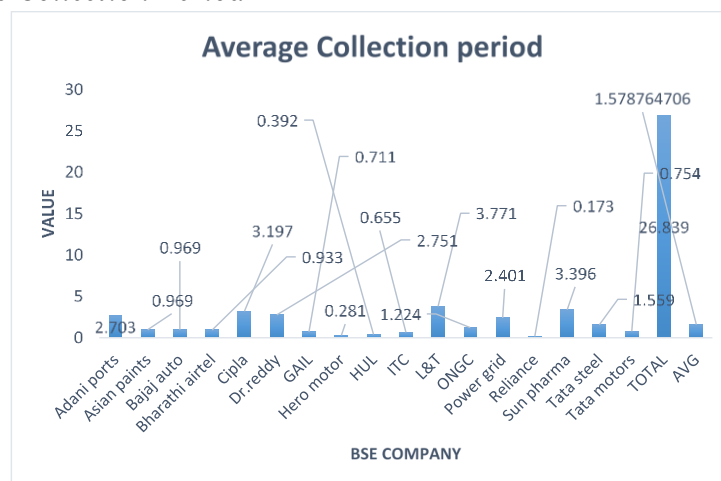
The return on assets (ROA) shows the percentage of how profitable a company's assets are in generating revenue.

- ITC has highest ROA about 0.409.
- Power grid has lowest ROA about 0.043

Table – 2: Average Collection Period

Adani ports	2.703
Asian paints	0.969
Bajaj auto	0.969
Bharathi Airtel	0.933
Cipla	3.197
Dr. reddy	2.751
GAIL	0.711
Hero motor	0.281
HUL	0.392
ITC	0.655
L&T	3.771
ONGC	1.224
Power grid	2.401

Reliance	0.173
Sun pharma	3.396
Tata steel	1.559
Tata motors	0.754
TOTAL	26.839
AVG	1.578764706

Chart – 2: Average Collection Period**Interpretation**

Average Collection Period is considered an important tool in measuring liquidity

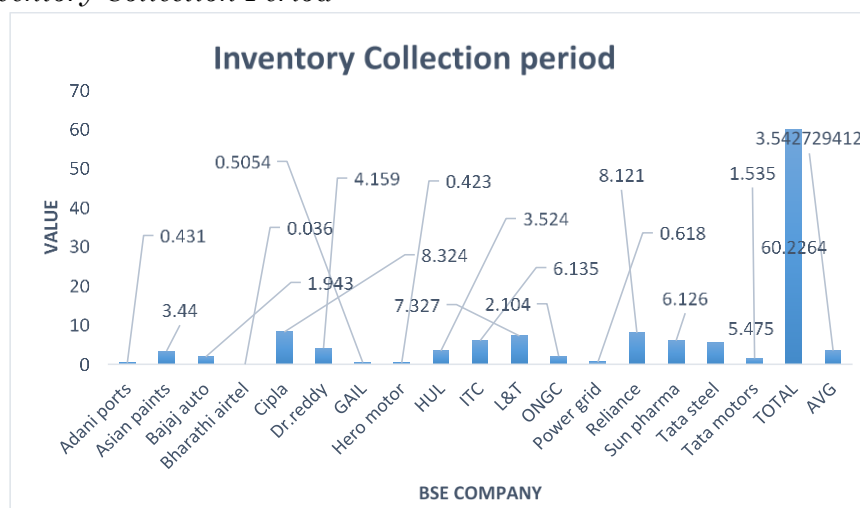
- L&T has highest ACP about 3.771
- Reliance has lowest ACP about 0.173

Table – 3: Inventory Collection Period

Adani ports	0.431
Asian paints	3.44
Bajaj auto	1.943
Bharathi airtel	0.036
Cipla	8.324
Dr.reddy	4.159
GAIL	0.5054
Hero motor	0.423
HUL	3.524
ITC	6.135
L&T	7.327
ONGC	2.104
Power grid	0.618
Reliance	8.121
Sun pharma	6.126

Tata steel	5.475
Tata motors	1.535
TOTAL	60.2264
AVG	3.542729412

Chart – 3: Inventory Collection Period



Interpretation

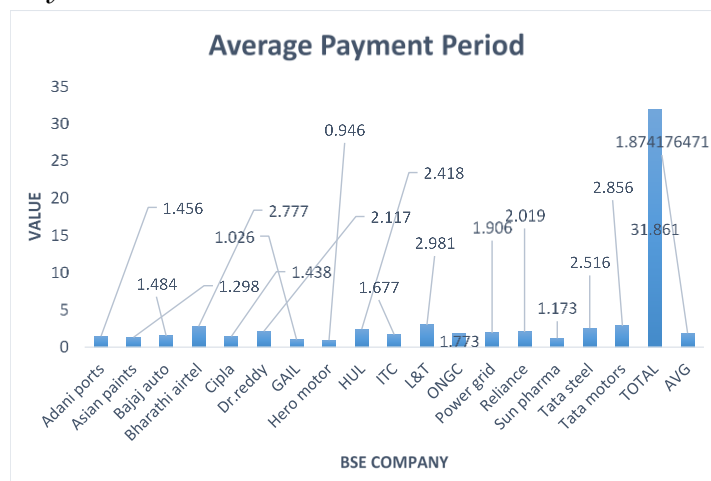
The Inventory collection period measures the number of days' funds are tied up in inventory.

- Cipla has highest ICP about 8.234
- Bharati Airtel has lowest ICP about 0.036

Table – 4: Average Payment Period

Adani ports	1.456
Asian paints	1.298
Bajaj auto	1.484
Bharathi airtel	2.777
Cipla	1.438
Dr.reddy	2.117
GAIL	1.026
Hero motor	0.946
HUL	2.418
ITC	1.677
L&T	2.981
ONGC	1.773
Power grid	1.906
Reliance	2.019
Sun pharma	1.173

Tata steel	2.516
Tata motors	2.856
TOTAL	31.861
AVG	1.874176471

Chart – 4: Average Payment Period**Interpretation**

Average Payment Period is also a critical part of the "Cash Cycle", which measures APP and the related Days Sales Outstanding and Days in Inventory.

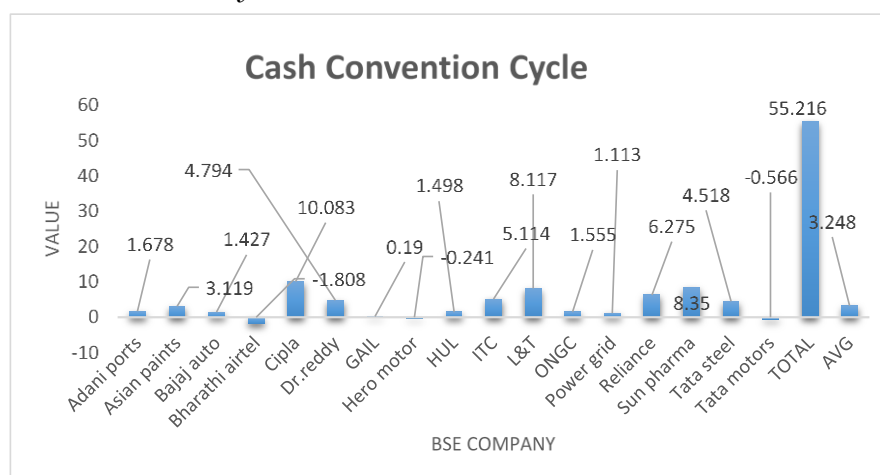
- L&T has higher APP about 2.981
- Hero motor has lowest APP about 0.946

Table – 5: Cash Convention Cycle

Adani ports	1.678
Asian paints	3.119
Bajaj auto	1.427
Bharathi airtel	-1.808
Cipla	10.083
Dr.reddy	4.794
GAIL	0.19
Hero motor	-0.241
HUL	1.498
ITC	5.114
L&T	8.117
ONGC	1.555
Power grid	1.113
Reliance	6.275
Sun pharma	8.35
Tata steel	4.518

Tata motors	-0.566
TOTAL	55.216
AVG	3.248

Chart – 5: Cash Convention Cycle



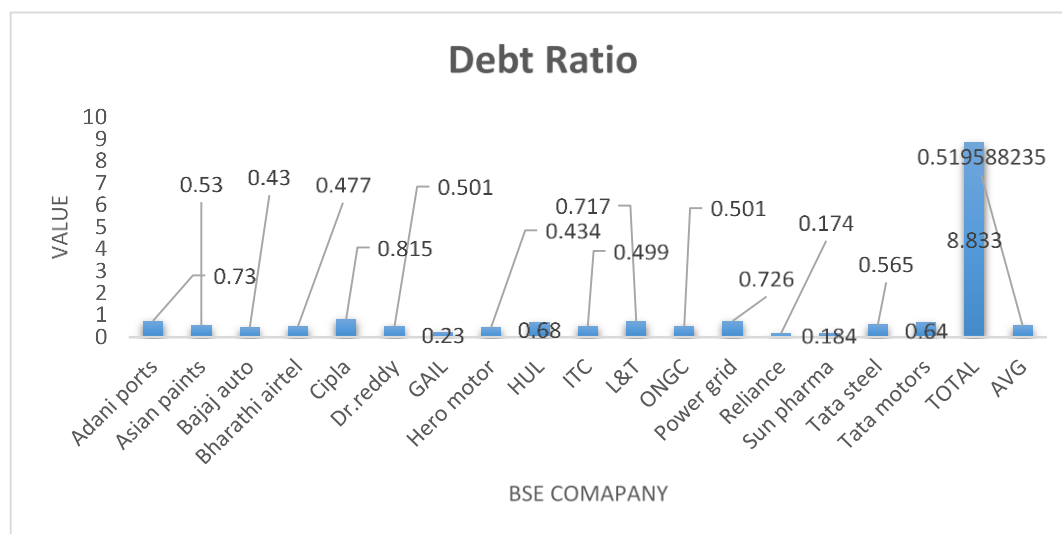
Interpretation

The term "Cash Conversion Cycle" refers to the timespan between a firm's disbursing and collecting cash.

- Sun pharma has highest CCC about 8.35
- Bharati Airtel has lowest (negative)CCC about -1.80

Table – 6: Debt Ratio

Adani ports	0.73
Asian paints	0.53
Bajaj auto	0.43
Bharathi airtel	0.477
Cipla	0.815
Dr.reddy	0.501
GAIL	0.23
Hero motor	0.434
HUL	0.68
ITC	0.499
L&T	0.717
ONGC	0.501
Power grid	0.726
Reliance	0.174
Sun pharma	0.184
Tata steel	0.565
Tata motors	0.64
TOTAL	8.833
AVG	0.519588235

Chart – 6: Debt Ratio**Interpretation**

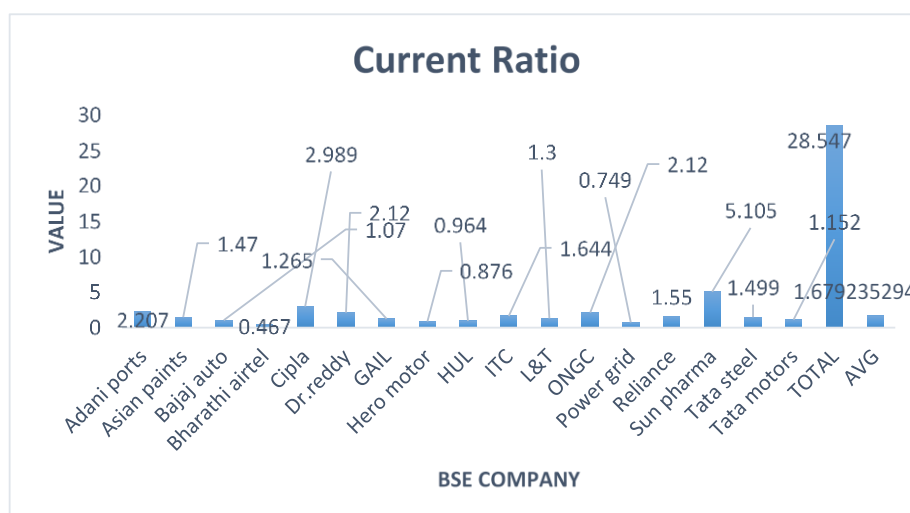
Debt Ratio is a financial ratio that indicates the percentage of a company's assets that are provided via debt.

- Cipla has highest debt ratio about 0.815
- Sun pharma has lowest debt ratio about 0.18.

Table – 7: Current Ratio

Adani ports	2.207
Asian paints	1.47
Bajaj auto	1.07
Bharathi airtel	0.467
Cipla	2.989
Dr.reddy	2.12
GAIL	1.265
Hero motor	0.876
HUL	0.964
ITC	1.644
L&T	1.3
ONGC	2.12
Power grid	0.749
Reliance	1.55
Sun pharma	5.105
Tata steel	1.499
Tata motors	1.152
TOTAL	28.547
AVG	1.679235294

Chart – 7: Current Ratio



Interpretation

The current ratio is a liquidity ratio that measures whether or not a firm has enough resources to meet its short-term obligation.

- Sun pharma has highest current ratio about 5.105
- Bharati Airtel has lowest current ratio about 0.46

Table – 8: Sales Growth

Adani ports	0.444
Asian paints	0.241
Bajaj auto	0.13
Bharathi airtel	0.267
Cipla	0.155
Dr.reddy	0.359
GAIL	0.166
Hero motor	0.134
HUL	0.196
ITC	0.158
L&T	0.2407
ONGC	0.846
Power grid	0.192
Reliance	0.193
Sun pharma	0.36
Tata steel	0.467
Tata motors	0.303
TOTAL	4.8517
AVG	0.285394118

Chart – 8: Sales Growth**Interpretation**

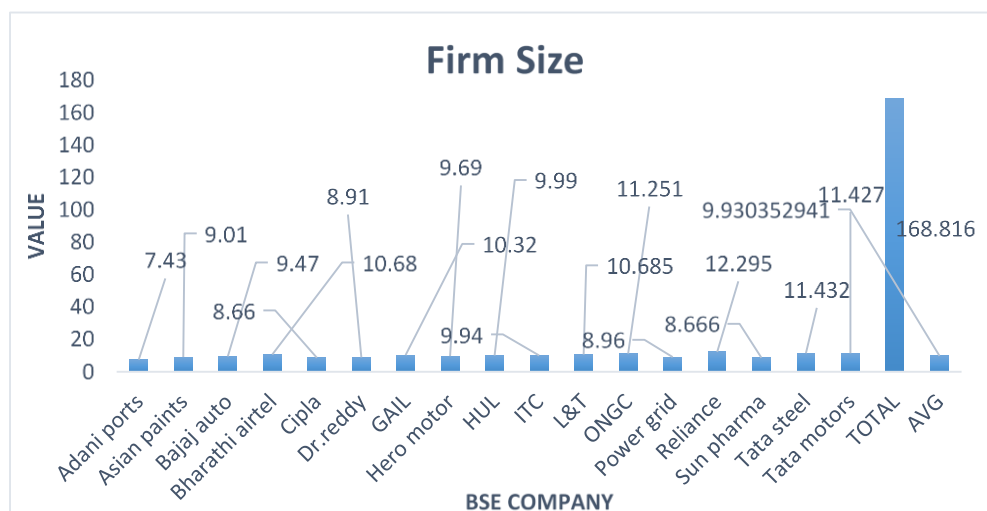
It is growth of the company for each and every year of sales.

- ONGC has highest Sales growth about 0.846
- Bajaj Auto has lowest Sales growth about 0.13.

Table – 9: Firm Size

Adani ports	7.43
Asian paints	9.01
Bajaj auto	9.47
Bharathi airtel	10.68
Cipla	8.66
Dr.reddy	8.91
GAIL	10.32
Hero motor	9.69
HUL	9.99
ITC	9.94
L&T	10.685
ONGC	11.251
Power grid	8.96
Reliance	12.295
Sun pharma	8.666
Tata steel	11.432
Tata motors	11.427
TOTAL	168.816
AVG	9.930352941

Chart – 9: Firm Size



Interpretation

SIZE is the company size as measured by natural logarithm of total sales.

- Reliance has highest Firm Size about 12.295
- Cipla & Sun pharma both has lowest Firm Size about 8.66.

Table – 10: Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
ROA	22	.04	.41	.1582	.10102
ACP	22	.17	3.77	1.5728	1.19658
ICP	22	.03	8.32	3.5391	2.89175
APP	22	.95	2.98	1.8726	.64822
CCC	22	-1.80	10.08	3.2456	3.45451
CR	22	.47	5.11	1.6792	1.08018
DR	22	.17	.82	.5196	.19198
GS	22	.13	.85	.2854	.17815
LnSales	22	7.43	12.30	9.9304	1.26691

From the above **table 9** presents the summary statistics of the variables used in the present study for selected companies of 10 year observations were used. The mean value of **return on assets** is 15% with a standard deviation of 10.1% from the range 4 - 41%. The mean **accounts collection period** is 157.28 days with a standard deviation of 119.658 days. On average, firms take 353.91 days to convert their **inventories into sales** with a standard deviation of 289.17 days. The table also shows that on average the firms take 187.26 days to **pay its creditors** with a standard deviation of 64.822 days. The mean **cash conversion cycle** is 324.56 days. The table further shows that an average firm has a **size** of 993.04 as measured by the natural logarithm of its total assets. The mean **debt ratio** is

51.96% lagged by total assets. The typical firm in the sample has a **current ratio** of 1.6792. Together with this, the firms have seen their **sales growth** by almost 28.54% annually on an average.

Table – 11: Correlation

Variable		ROA	ACP	ICP	APP	CCC	CR	DR	GROWTH	FIRM SIZE
ROA	Pearson Correlation	1								
	Sig. (2-tailed)									
ACP	Pearson Correlation	-.396	1							
	Sig. (2-tailed)	.115								
ICP	Pearson Correlation	.155	.342	1						
	Sig. (2-tailed)	.552	.179							
APP	Pearson Correlation	-.369	.063	.139	1					
	Sig. (2-tailed)	.145	.810	.594						
CCC	Pearson Correlation	.063	.619**	.929**	-.050	1				
	Sig. (2-tailed)	.810	.008	.000	.849					
CR	Pearson Correlation	.053	.578*	.469	-.379	.663**	1			
	Sig. (2-tailed)	.841	.015	.058	.134	.004				
DR	Pearson Correlation	-.153	.368	-.034	.373	.028	-.236	1		
	Sig. (2-tailed)	.557	.147	.896	.140	.916	.362			
GROWTH	Pearson Correlation	-.262	.172	-.105	.138	-.054	.288	.041	1	
	Sig. (2-tailed)	.310	.508	.689	.598	.836	.262	.877		
LnSales	Pearson Correlation	-.131	-.510*	.173	.531*	-.131	-.383	-.305	.155	1
	Sig. (2-tailed)	.616	.036	.508	.028	.616	.130	.234	.553	

Note: **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-Tailed).

From the above table 11, the return on assets is negatively correlate with

- Average collection period, due to delay in collecting cash to satisfy the accounts receivable generated by that sale.
- Average Payment Period is lagging payments in disbursing cash to satisfy the accounts payable created by purchase of inventory.
- Debt ratio denotes the total debt of the companies' increases due to liability exceeds assets.
- The growth of the company in sales is decreases year by year.
- LnSales, net sales of the firm decreases by fallen in the growth and

The positively correlate with

- Cash Conversion Cycle is positively correlate with Return on assets, where time span of company between collection and payment to inventory purchase and sales is better.
- Inventory Collection Period is also positively correlate with Return on assets, company holding the inventory for a longer period.
- Current Ratio are positively correlate with Return on assets, the company has enough resources to meet its short-term obligations in which is more likely to pay the creditor back

3.1 Regression

i) Variance Inflation Factor (VIF)

Variance inflation factors (VIF) measure how much the variance of the estimated regression coefficients are inflated as compared to when the predictor variables are not linearly related. It is used to explain how much amount multicollinearity (correlation between predictors) exists in a regression analysis. Multicollinearity is dangerous because it can increase the variance of the regression coefficients. Below are the guidelines to interpret the VIF easily:

- $VIF = 1$ (Not correlated)
- $1 < VIF < 5$ (Moderately correlated)
- $VIF > 5$ to 10 (Highly correlated)

Table – 12

Parameter	Model 1	Model 2	Model 3	Model 4
ACP			2.540	
ICP		3.065		
APP				2.491
CCC	3.333			
CR	5.781	5.153	2.867	1.775
LnSales	2.555	3.718	1.748	3.088
GS	2.036	2.244	1.310	1.309
DR	2.134	2.147	2.033	2.370

From the **table 12**, the variance inflation factors for the selected variables with respect to the model are calculated. In that model 1 & model 2 are highly correlated. VIF value for current ratio is (5.781, 5.153). Due to high correlation there exists multicollinearity. The square root of the variance inflation factor indicates how much larger the standard error is, compared with the current ratio in the model were uncorrelated. Model 3 & model 4 are accepted.

ii) Dependent Variable: Return on Assets (ROA)

Table – 13

Parameter	Model 1	Model 2	Model 3	Model 4
Constant	0.32		0.811	0.971
ACP			0.000	
ICP		0.326		
APP				0.000
CCC	0.066			
CR	0.076	0.194	0.000	0.000
LnSales	0.012	0.269	0.000	0.000
GS	0.040	0.446	0.230	0.001
DR	0.120	0.466	0.043	0.013
R ²	0.826	0.850	0.977	0.994
Adjusted R ²	0.746	0.782	0.967	0.991
Durbin - waston	2.416	2.409	2.565	2.607
F-Value	10.420	12.450	95.444	344.745
Model sig	0.001	0.000	0.000	0.00

From the above **table 13**, the analysis of independent variable from each and every model is found that account payment period (ACP) statistically significant at 0.05 level. In model 1 & 2, the R square (R²) is 80 – 85%, while model 3 is 98% and model 4 is 99%, it indicates that there will be change in firm's performance and also be affected. It means the firm's performance is significantly affected by changes in all models. Through statistics F-value, Durbin Watson test & R² from the model 1, 2, 3 & 4. Finally, we summarize that the model 4 is statistically best model for explaining the dependent variable. The hypothesis H₁, H₂, H₃ are rejected. Hence the hypothesis **H₄, Accounts payable** periods has significant impact on the financial performance of firms and therefore it is accepted.

FINDINGS

- It has been observed from the above analysis that highest value for the Selected variables are given below:
 - ITC on Return on Assets of the company
 - L&T on Average Collection Period and Average Payment Period.
 - Cipla on Inventory Collection Period and Debt Ratio.

- Sun pharma on Cash Conversion Cycle and Current Ratio.
- ONGC on Growth Sales
- Reliance on Firm Size.
- From the **descriptive statistics**, the mean value of **return on assets** is 15% with a standard deviation of 10.1% from the range 4 - 41%.
 - The mean **accounts collection period** is 157.28 days with a standard deviation of 119.658 days. On average, firms take 353.91 days to convert their **inventories into sales** with a standard deviation of 289.17 days.
 - The table also shows that on average the firms take 187.26 days to **pay its creditors** with a standard deviation of 64.822 days.
 - The mean **cash conversion cycle** is 324.56 days. The table further shows that an average firm has a **size** of 993.04 as measured by the natural logarithm of its total assets.
 - The mean **debt ratio** is 51.96% lagged by total assets. The typical firm in the sample has a **current ratio** of 1.6792. Together with this, the firms have seen their **sales growth** by almost 28.54% annually on an average.
- The results of **correlation** show that **Cash Conversion Cycle** is positively correlate with Return on assets, where time span of company between collection and payment to inventory purchase and sales is better.
 - **Inventory Collection Period** is also positively correlate with Return on assets, company holding the inventory for a longer period.
 - **Current Ratio** are positively correlate with Return on assets, the company has enough resources to meet its short-term obligations in which is more likely to pay the creditor back
- The **Variance Inflation Factor (VIF)** for the selected variables with respect to the model to be calculated that the model 3 & model 4 where accepted due to the square root of the variance inflation factor indicates how much larger the standard error is, compared with the current ratio in the model were uncorrelated.
- The analysis of **regression** has found that account payment period (ACP) statistically significant at 0.05 level, it affected the firm's performance changes in R square.
- It means the firm's performance is significantly affected by changes in all models.
- Through statistics F-value, Durbin Watson test & R² from the model 1, 2, 3 & 4.
- Finally, we summarize that the model 4 is statistically best model for explaining the dependent variable.
- The hypothesis H₁, H₂, H₃ are rejected. Hence the hypothesis **H₄, Accounts payable period** has significant impact on the financial performance of firms and therefore it is accepted.

SUGGESTIONS

In the light of the foregoing analysis and findings, the following suggestions can be made to improve the conditions of the firm

- Since the present study is made from the selected companies in Bombay stock exchange, it could be extended to other companies.
- From the findings of selected variables such as return on assets, collection and payment, ratio...etc., performance of the company need to be improved where others firm beyond the findings.
- The statistically findings also shows a good liquid position of the companies as the quality of debtors' was good. It indicates that the company made collection from their debtors' efficiently in short period. So remaining selected companies should try to decrease their credit and collection period as early as possible.
- It also means that company position to reflect its Current Liabilities properly and tries to increase the Current Assets.
- In order to improve the wealth of manufacturing firms, management should endeavour to find and employ a viable working capital composition that increases firms' financial performance
- The negative significant relationship between manufacturing firms' financial performance and average collection period will increase those firms' profitability, if there is high collection of account receivables.
- Holding inventories, the firm is able to separate the processes of purchasing, producing, and sailing.
- In general, the above discussions demonstrate that paying suppliers longer and collecting payments from customers earlier, and keeping products in stock less time, are all associated with an increase in the firm's performance.

CONCLUSION

Working capital management is essentially an accounting strategy with a focus on the maintenance of a sufficient balance between a company's current assets and liabilities. An effective working capital management system allows businesses to not only cover their financial obligations, but it is also a way to help companies boost their earnings. Managing working capital means managing inventories, cash, accounts payable and accounts receivable. An efficient working capital management system often uses key performance ratios, to help identify areas that require focus in order to maintain liquidity and profitability.

Proper management of working capital is essential to a company's fundamental financial health and operational success as a business. A hallmark of good business management is the ability to utilize working capital management to maintain a solid balance between growth, profitability and liquidity. At a high level, working capital is the funds available to your company for use in your day-to-day operations. Working capital is also what investors will look at to assess both your company's short-term financial health and its liquidity.

Hence the average payment period is significantly relationship between working capital management and firms' performance and cash conversion cycle is positively correlate with cash conversion cycle, inventory collection period and current ratio. It means the firm's performance is significantly affected by changes in all models.

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APPENDIX**Table 14:** *List of BSE SENSEX Companies*

S.NO	COMPANY NAME
1	Adani Ports
2	Asian Paints
3	Bajaj Auto Ltd
4	Bharti Airtel Ltd
5	Cipla Ltd
6	Coal India Ltd
7	Dr. Reddy's Laboratories Ltd
8	GAIL
9	Hero Motocorp
10	Hindustan Unilever Limited
11	ITC
12	Larsen
13	M&M
14	Maruti Suzuki
15	NTPC Ltd
16	Oil and Natural Gas Corporation Ltd
17	Power Grid Corporation of India
18	Reliance Industries Ltd
19	Sun Pharmaceutical Industries Ltd
20	Tata Motors Ltd
21	Tata Steel Ltd
22	Tata Consultancy Services Ltd